CALIFORNIA PUBLIC UTILITIES COMMISSION

Water Division

RATE DESIGN FOR WATER AND SEWER SYSTEM UTILITIES

Standard Practice U-7-W

San Francisco, California
August 2001

77692

RATE DESIGN FOR WATER AND SEWER SYSTEM UTILITIES

A – INFORMATION NEEDED

1. After the revenue requirement has been determined (See Standard Practice U-3-W and U-3-SM), rates are designed to allow the utility to collect the authorized revenues. In order to design water and sewer rates, the analyst needs the following information:

(1) Revenue requirement
(2) Amount of revenue requirement due to fixed costs
(3) Number of customers for each connection size
(4) Expected annual water sales (water produced and purchased less unaccounted for water)
(5) If rates are to be phased in, the amount of revenues approved for the first year and subsequent years[1]

B – CALCULATING FLAT RATES

2. The Commission has long supported metering of water service (Decision 328, November 12, 1912). Consequently there should be no new flat rate customers. The flat rate should be equal to the average bill for a metered customer of the same connection size. Where more than one dwelling exists on the same property, the rate for the additional buildings should equal the rate for the first building unless the property has landscaping that requires watering with utility water. In that case the flat rate for the additional buildings should be set at the average bill minus one-half of the average amount paid by metered customers for the water itself (one half of the average use times the commodity charge).

[1] D.60648, August 30, 1960, Crestmore Village Water Company

C – CALCULATING METERED RATES

3. An Order Instituting Investigation (OII)[2] was opened on November 21, 1984 to determine whether the existing rate design policy for water utilities resulted in a realistic and appropriate distribution of revenues between the service charge and consumption charge. There was no standard definition of fixed cost within the water industry at that time. The rate design policy was based on a service charge (to recover the costs associated with providing customers access to water) and the commodity charges (to recover the costs of the water delivered to a customer). Staff recommended a flatter rate design policy with the elimination of lifeline water service. The OII resulted in D.86-05-064, May 28, 1986, which modified water rate design as follows:

> (1) A flatter rate design policy shall be adopted as statewide rate design policy for water utilities.
> (2) The flatter rate design policy shall incorporate the following guidelines:
> a. Service charges shall be set to allow utilities to recover up to 50% of their fixed cost.
> b. Lifeline rates shall be phased out.
> c. There may be multiple commodity blocks, with the number of commodity blocks to be limited to no more than three blocks.
> d. Seasonal rates may be applied in resort areas.

4. This rate design was reviewed in the Risk OII proceeding (I.90-11-033) and modified to allow recovery of 50% of the fixed costs in the service charge for Class A and B water companies, 65% for Class C and 100% for Class D[3]. When any regulated water utility acquires an inadequately

[2] Order Instituting Investigation I.84-11-041

[3] D. 92-03-093, March 31, 1992, O.P. 6. Class A companies serve over 10,000 service connections, class B 2001 through 10,000, class C 501 through 2000 and class D 500 service connections or less.

operated and maintained small water utility, it may also design rates to recover up to 100% of the fixed costs in the service charge[4].

5. D.85-06-064 also determined that the meter service charge ratios were out of date and directed the Water Branch to send a letter to all Class A water utilities proposing new ratios. Branch sent this letter on December 6, 1990 proposing to spread the service charge over the meter sizes in proportion to the maximum capabilities of the meters themselves to handle flows. The ratios adopted are in proportion to the upper limits of normal test flows as shown in G.0. 103, Section VI.3.b[5]. These ratios are as follows:

Meter Size	Ratio
5/8x3/4 inch	1.0
3/4 inch	1.5
1 inch	2.5
1-1/2 inch	5.0
2 inch	8.0
3 inch	15.0
4 inch	25.0
6 inch	50.0
8 inch	80.0
10 inch	115.0
12 inch	165.0
14 inch	225.0

Where a larger size meter is required because the dwelling has a sprinkler system, the customer shall be billed and the rates shall be designed using the ratio for the meter size that would have been required without the sprinkler system (some modest extra charge may be included for the larger meter.)

[4] D.99-10-064, October 21, 1999, Appendix D, para. 3.03 B

[5] January 18, 1991 Water Utilities Branch letter, "Rate Design Policy -- Service Charge allocation by meter size"

6. Rates for water and sewer system companies that serve summer or vacation homes should be designed so that the transient customers pay their fair share[6] of the fixed and variable costs of the system. This can be done by imposing an annual service charge, paid in advance, and by metering and billing quarterly or monthly for water use[7].

7. Calculate the service charge by first determining the amount of the revenue requirement that is a result of fixed costs. For Class A and B water companies the percentage is 50%, for Class C it is 65% and for Class D it is 100%. Multiply the dollar amount by the percentage for the size of the utility. These dollars are then spread to different meter sizes as follows:

a. First multiply the number of services of each size by the ratios contained in Appendix A ("meter-equivalents"). Sum the products and divide the sum into the dollars to be spread. The result is the service charge for a 5/8x3/4 inch meter.
b. The other service charges are calculated by multiplying the charge for the 5/8x3/4 inch meter by the meter ratios.

D – COMMODITY CHARGE

8. The commodity charge must recover the remaining revenues. Calculate this charge by dividing the remaining revenues by the expected annual sales.

[6] see D.52450, January 4, 1956 in A.36896, D.52903, April 17, 1956 in A.37103 and D.58250, April 7, 1959 in A.40517

[7] D.66729, January 28, 1964 in A.45164

E – CONSERVATION RATES

9. During times of drought or other shortage in water supply the Commission may adopt “increasing block” rates. This rate design sets a “reasonable” amount of water use and charges customers who use more than this amount a higher commodity charge (see D.00-03-053 for example). These types of rate designs are much more volatile that the Commission’s standard rate design and may also involve a revenue adjustment mechanism which tracks revenues and allows the utility to make up or give back revenues that were less or more than the adopted revenue requirement.

F – LIMITS ON RATE INCREASES

The Commission's policy that puts limits on rate increases is contained in a memo titled "CAPS Standard Procedure", dated February 22, 1983. It provides guidelines that allow a maximum of 50% increase in the first year, with step rates being authorized for the second year (that recovers accrued interest on the deferred revenues if that increase doesn't exceed 50%) and the third year to establish proper rates[8]. This process should be used only where the high rate increase also results in a high bill. Otherwise the customers will be confused about the rates for no good purpose.

G – RATE DESIGN – SEWER

Sewer rate design is similar to flat rate water rate design, all similar customers should pay the same rate, and customers who pay different rates should do so based on differing costs to the utility to provide service. Sewer load may be estimated or calculated, and thus becomes the basis for the rate.

H – TAXES

Since the passage of Proposition 13, many municipalities have levied a "utility tax". This tax is usually collected as a percentage of the utility bill. These taxes should be a separate line item on the bill and shall only apply to the customers within the municipality imposing them.

I – UTILITY REIMBURSEMENT ACCOUNT

Sections 402 and 432 et. seq. of the Public Utilities Code requires the Commission to assess a fee on each public utility it regulates. For water and sewer system utilities that fee is 1.4% of gross utility revenue. Gross utility revenue includes all surcharges and Safe Drinking Water Bond Act or State Revolving Fund revenues. It does not include utility taxes or charges that are set by and passed on to a governmental agency.

J – PROCEDURE FOR CALCULATING THE SECOND TEST YEAR FOR WATER UTILITIES WITH THREE YEAR RATE CASE CYCLE

In general rate cases for most large water utilities, there are two test years and one attrition year. The calculation for the revenue increase for the first year is the difference in revenues between the adopted present rates and the authorized increased rates at the adopted number of customers and sales of all the service classes. The revenue increase for the second test year is adjusted for customer growth in the second test year, so it is not just the

[8] See also D.54818, April 9, 1957 in A.36646 and D.60648, August 30, 1960 in A.41961

mathematical difference between revenues of the first and second test years. The revenue for the attrition year is calculated by applying the operational attrition plus financial attrition times the adopted rate base times the net-to-gross multiplier. The revenue increase for the attrition year is the difference in revenues between the attrition year and the second test year.

For the second test year, the increase in gross annual revenues consists of two parts: increase due to customer growth and the increase due to results of operation such as increases in expenses and rate base. However, an increase in gross annual revenues due to customer growth is not an increase in rates, even though it increases gross annual revenues. This increase in customers therefore, needs to be compensated for in determining the annual dollar and percent increases. The method shown on the attached sheets shows how to calculate the actual gross revenue increase without the influence of customer growth.

TO DETERMINE REVEUE INCREASES

.

Obtain number of customers and total consumption for each block for both test years.

For First Test Year

Obtain adopted present revenues from decision. ($2,383,200)

Obtain authorized revenues from decision. ($2,533,900)

Calculate revenue and percent increase. ($150,700; 6,32%)

For Second Test Year

Calculate revenue using second test year customers and first test year authorized rates. ($2,555,672)

Obtain authorized revenue from decision. ($2,649,800)

Calculate dollar and percent increase using (a) and (b).

See attached example

So-Cal Water Co.
San Gabriel District

TOTAL METERED SERVICES

	1998				1999				
	Number Customers	Authorized Rates	Revenue		Number Customers	@1998 Rates Rates	Revenue	Authorized Rates	Revenue
5/8	10023	4.60	553270		10271	4.60	566959	4.80`	591610
3/4	44	4.90	2587		44	4.90	2587	5.10	2693
1	870	7.00	73080		872	7.00	73248	7.30	76387
1 1/2	84	9.25	9324		84	9.25	9324	9.60	9677
2	178	14.00	29904		178	14.00	29904	14.60	31186
3	16	25.50	4896		16	25.50	4896	26.50	5088
4	9	33.00	3564		9	33.00	3564	34.00	3672
6	3	63	2268	;	3	63.00	2268	66.00	2376
8	0	87	0		0	87.00	0	91.00	0
10	0	126	0		0	126.00	0	169.00	0
sub	11227		678893		11477		692750		722689
3	332600	0.5853	194684		334100	0.5853	195562	0.6055	202284
Over 3	2805500	0.5853	1642171		2817500	0.5853	1649195	0.6055	1705884
sub	3138100		1836855		3151600		1844758		19088168
Total Meter Rev.		2515748				2537508		2630856	
Flat Rate Rev.									
Prv.Fire	35	27.70	11664			27.77	11664	27.77	11664
Other			6500				6500		7300
Total Flat Rev.			18164				18164		18964
TOTAL REVENUE			2533912				2555672		2649819

1998 Present Rev.	2383912		
1998 Auth. Rev.		2533900	
$ Increase		150700	
% Increase		6.32	
1999 Rev. @ new 1998 rates			2555672
1999 Auth. Rev			2649800
$ Increase			94128
% Increase			3.68